# UNITED STATES PATENT AND TRADEMARK OFFICE

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/598,631 | 06/21/2000 | Robert Daniel Maher III | NR-2 | 6324 |

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| EXAMINER |
|---|
| LEMMA, SAMSON B |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2132 | |

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | Application No. | Applicant(s) | |
|---|---|---|---|
| **Office Action Summary** | 09/598,631 | MAHER ET AL. | |
| | Examiner | Art Unit | |
| | Samson B Lemma | 2132 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *21 June 2000*.

2a)☐ This action is **FINAL**.     2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is

    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All  b)☐ Some * c)☐ None of:

    1.☐ Certified copies of the priority documents have been received.

    2.☐ Certified copies of the priority documents have been received in Application No. _____.

    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage

        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>2</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____ .

# DETAILED ACTION

1.      Claims 1-16 have been examined.

# Claim Rejections - 35 USC § 103

2.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness

rejections

set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art
> are such that the subject matter as a whole would have been obvious at the time the invention was made to a
> person having ordinary skill in the art to which said subject matter pertains.  Patentability shall not be
> negatived by the manner in which the invention was made.

3.      Claims 1- 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kloth (U.S.

Patent No. 6,598,034) in view of Lorrain et al (hereinafter referred as Lorrain)(U.S. Patent No.

6,636,512).

4.      As per claim 1, Kloth discloses a method for preventing denial of service attacks over a

data

network including a plurality of traffic flows each formed by a plurality of data

packet, the method comprising:

        scanning the contents of the data packet; (column 4, lines 40-43)

        verifying that the data packets conform to a set of predetermed

        requirements; (column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10]

checking if the data packet is associated with a validated traffic flow; and [column 10,

lines 38-46; column 10, lines 55-57]

kloth discloses that a rule (requirement) generator for providing rules for processing the

data packets according to the analyzed bit patterns; and the rules are applied to the bit

patterns which are parsed from the IP flow and IP packets traffic types and priorities resulting

form application of the rules (requirements) are mapped onto the existing Quality of service

(QOS) assignments.(column 16, lines 43-49). Kloth further discloses the different service level

can be used to further decide the appropriate routing speed (priority) to be applied to the data

packet.(column 7, lines 45-49].

Kloth does not explicitly teach placing the data packet in a higher priority quality of service if

the data

packet is associated with a validate traffic flow;  and to a low priority quality of service if it is

not associated with a validate traffic flow. However, Lorrain discloses reserving bandwidth for

higher priority quality of service if the data packet is associated with a Real Time (RT] traffic

(interpreted as "validated traffic" by the office) and serving the packet that is associated with

Non Real Time (NRT) traffic (interpreted by the office as  "non validated traffic") with lower

quality of service, after the all higher priority traffic has been served.( column 2, lines 20-37].

 Accordingly, It would have been obvious to one having ordinary skill in the art at the invention

was made to combine the Kloth's assignment of different Quality of service as per teachings of

Lorrain's in order to prevent denial of service by placing  the data packet  in a higher priority

quality of service if the data packet is associated with a Real Time or validated traffic flow and

to a low priority quality of service if it is not associated with a Real Time traffic flow (validated

traffic flow).


5.      As Claim 7, Kloth discloses the method of preventing denial of service attacks on a data

network

which includes a plurality of traffic flows each formed by multiple data packets

having header and payload information, the method using a network device

comprising a traffic flow scanning engine; and a quality of service processor having

a low priority queue and higher priority queues, the method comprising:

scanning the header information using traffic flow scanning engine; (column 4, lines 40-

43; column 3, lines 62-63)

reordering and reassembling the data packets using the traffic flow scanning

engine; [column 7, lines 26-28]

flagging data packets that do not reorder or reassemble correctly to be

dropped; [column 12, lines 5-11]

scanning the payload contents using the traffic flow scanning engine; [column 8, lines

37-47; column 3, lines 62-63; column 10, lines 38-42]

determining whether the data packets conform to a set of predetermined

requirements; [column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10]

flagging data packets that do not conform to be dropped; [column 5, lines 4-10]

checking if the data packets are associated with a validated traffic flow; and [column

10, lines 38-46; column 10, lines 55-57]

kloth discloses that a rule (requirement) generator for providing rules for processing the data

packets according to the analyzed bit patterns; and the rules are applied to the bit patterns

which are parsed from the IP flow and IP packets traffic types and priorities resulting form

application of the rules (requirements) are mapped onto the existing Quality of service (QOS)

assignments.(column 16, lines 43-49). Kloth further discloses the different service level can be

used to further decide the appropriate routing speed (priority) to be applied to the data

packet.(column 7, lines 45-49].

Kloth does not explicitly teach assigning the data packets to a higher priority quality of service

if the data

packet is associated with a validate traffic flow; and to a low priority quality of service if the

data packet is not associated with a validate traffic flow. Kloth does not also explicitly teach

flagging the data packets that do not reorder or reassemble correctly to be dropped and

flagging data packets that do not conform to be dropped.

However, Lorrain discloses reserving bandwidth for higher priority quality of service if the data

packet is associated with a Real Time (RT] traffic (validated traffic) and serving the packet that

is associated with Non Real Time (NRT) traffic or non validated traffic with lower quality of

service, after the all higher priority traffic has been served.( column 2, lines 20-37].

Lorrain further discloses that packets that are dropped with in the network are flagged as

discardable packets through the use of so- called Discardable Eligibility (DE) identifier bit.[

column 2, lines 17-19]

 Accordingly, It would have been obvious to one having ordinary skill in the art at the invention

was made to combine the Kloth's assignment of different Quality of service and at the same

time flagging of the dropped packets as per teachings of Lorrain's in order to prevent denial of

service by assigning the data packet in a higher priority quality of service if the data packet is

associated with a Real Time or validated traffic flow and to a low priority quality of service if it

is not associated with a Real Time traffic flow (validated traffic flow) and drop packets that do

not satisfy the requirements.




6.      As per claim 12, Kloth discloses a network device for preventing denial of service

attacks on a data

network which includes a plurality of traffic flows each formed by multiple data

packets having contents including header information and payload information, the

network device comprising:

a traffic flow scanning engine operable to scan the header and payload

information of the data packets, to associate each data packet with a particular

traffic flow and to determine whether each traffic flow is a validated traffic flow or

a non-validated traffic flow, wherein the traffic flow scanning engine is further

operable to reorder and reassemble the data packets and to verify that the data

packet conforms to predetermined requirements such that the traffic flow scanning engine

produces a conclusion associated with each data packet; and (column 4, lines 40-43; column

3, lines 62-63; column 3,

column 8, lines 37-46; column 3, lines 62-63; column 7, lines 30-49;  column 7, lines 26-28;

column 4, lines 40-45; column 6, lines 18-20; column 5, lines 4-10; column 4, lines 12-13].


Kloth discloses a quality of service processor connected to the traffic flow scanning engine

and operable to place the data packets into a quality of service queue from a

plurality of quality of service queues based on the conclusion from the traffic flow

scanning engine,( column 7, lines 41-45; column 12, lines 60-67, figure 11]

kloth discloses that a rule (requirement) generator for providing rules for processing the data

packets according to the analyzed bit patterns; and the rules are applied to the bit patterns

which are parsed from the IP flow and IP packets traffic types and priorities resulting form

application of the rules (requirements) are mapped onto the existing Quality of service (QOS)

assignments.(column 16, lines 43-49). Kloth further discloses the different service level can be

used to further decide the appropriate routing speed (priority) to be applied to the data

packet.(column 45-49].

Kloth does not explicitly teaches a quality of service processor connected to the traffic flow

scanning engine

and operable to place the data packets into a quality of service queue from a

plurality of quality of service queues based on the conclusion from the traffic flow

scanning engine, wherein data packet from non-validated traffic flows are assigned

to a low priority queue and data packets form validated traffic flow are assigned to a

higher priority queue based on its contents. However, Lorrain discloses reserving bandwidth for

higher priority quality of service if the data packet is associated with a Real Time (RT] traffic

(validated traffic) and serving the packet that is associated with Non Real Time (NRT) traffic or

non validated traffic with lower quality of service, after the all higher priority traffic has been

served.( column 2, lines 20-37].

Accordingly, It would have been obvious to one having ordinary skill in the art at the invention

was made to combine the Kloth's assignment of different Quality of service as per teachings of

Lorrain's in order to prevent denial of service by assigning  the data to a low priority quality

queue for the data packet if it is not associated with a Real Time traffic flow (validated traffic

flow) and assigned to higher priority queues based on its content.


7.      As per claim 2, the combination of Kloth and Lorrain teach the method as applied to

claim 1 above. Furthermore Kloth teaches the method wherein verifying includes insuring that

the

data packet reorder and reassemble according to a defined policy and insuring that the

data packets conform to required parameters. (column 7, lines 26-28; column 6, lines 32-35;

column 5, lines 4-10).


8.      As per claim 3, the combination of Kloth and Lorrain teach the method as applied to

claim 1 above. Furthermore Kloth teaches the method further comprising between verifying

and

checking:

        dropping the data packet if it does not conform to the set of predetermined

        requirements. (column 5, lines 4-10)

9.      As per claim 4, the combination of Kloth and Lorrain teach the method as applied to

claim 3 above. Furthermore Kloth teaches the method wherein scanning  includes scanning of

the

data packet's header information and scanning of  the data packet's payload contents.(column

8, lines 40-42]

10.     As per claim 5, 8 and 16 the combination of Kloth and Lorrain teach the method as

applied to claim 1, 7 and 12 above. Furthermore Kloth teaches the method wherein the

predetermined requirements

include packet length, non-overlapping offset fields, and adherence to protocol

standards. (column 4,lines 5-8]

11.     As per claim 6 and 11, the combination Kloth and Lorrain teach the method as applied

to claim 5 and 7 above. Furthermore Lorrain teaches the method wherein the validated traffic

flows are

identified by a state associated with each traffic flow.(column 2, lines 20-37;column 12, lines

17-19 ]

12.     As per claim 9, the combination Kloth and Lorrain teach the method as applied to claim

7 above. Furthermore Lorrain teaches the method wherein flagged data packets are dropped by

the traffic flow scanning engine. (column 2, lines 15-19]

13.    As per claim 10, the combination Kloth and Lorrain teach the method as applied to

claim 7 above. Furthermore Lorrain teaches the method wherein flagged data packets are

dropped by

the quality of service processor [column 2, lines 15-19]


14.    As per claim 13, the combination Kloth and Lorrain teach the method as applied to

claim 12 above. Furthermore Lorrain teaches the method wherein the low priority queue is

assigned to a maximum percentage of network bandwidth. (column 2, lines 31-36)


15.  As per claim 14, the combination Kloth and Lorrain teach the method as applied to claim

12 above. Furthermore Kloth teaches the method wherein traffic packets that do not

reorder or reassemble correctly and data packets that do not conform to the

predetermined requirements are dropped by the network device.[column 12, lines 5-10]


16.    As per claim 15, the combination Kloth and Lorrain teach the method as applied to

claim 12 above. Furthermore Lorrain teaches the method wherein the traffic flows are

identified by a state associated with each traffic flow, the state representing whether the

traffic flow is validated or non-validated.[column 2, lines 20-37].( It is interpreted by the office

that Real Time traffic are considered to be a validated traffice and on the hand Non Real Time

Traffic are considered to be Non-Validated traffic).


## Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samson B Lemma whose telephone number is 703-305-8745. The examiner can normally be reached on Monday-Friday (8:00 am---4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BARRON JR GILBERTO can be reached on 703-305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SAMSON LEMMA

07/21/2004

JUSTIN T. DARROW
PRIMARY EXAMINER